

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFAg | Central Chilterns

Construction assessment (SV-003-009)

Sound, noise and vibration

November 2013

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Department
for Transport

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1 Introduction

- 1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these is an introduction to the relevant route-wide methodology, assumptions and assessment (Volume 5: Appendix SV-001-000). This relates to the sound, noise and vibration assessment for all community forum areas (CFA).
- 1.1.2 For the Central Chilterns community forum area (CFA 09), the other three sections are as follows:
- baseline sound, noise and vibration (Volume 5: Appendix SV-002-009);
 - construction sound, noise and vibration (Volume 5: Appendix SV-003-009) (this appendix); and
 - operational sound, noise and vibration (Volume 5: Appendix SV-004-009).
- 1.1.3 The outcomes of the assessment are summarised in Volume 2: CFA Report 09, Central Chilterns (CFA Report 09), Section 11.
- 1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5, Sound, Noise and Vibration Map Book.
- 1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the construction of the Proposed Scheme for the Central Chilterns area on:
- people, primarily where they live ('residential receptors') in terms of:
 - individual dwellings;
 - on a wider community basis, including any shared community open areas; and
 - community facilities such as schools, hospitals, places of worship, and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.
- 1.1.6 The assessment of likely impacts, effects and significant effects from construction noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:
- | | |
|-----------------------------------|---------------------|
| • Agriculture, forestry and soils | Appendix AG-001-009 |
| • Community | Appendix CM-001-009 |
| • Ecology | Appendix EC-005-009 |
| • Heritage | Appendix CH-003-009 |
| • Landscape and Visual | Appendix LV-001-009 |

1.2 Evaluation of impacts and effects

- 1.2.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.
- 1.2.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network as a consequence of constructing the Proposed Scheme are also reported in this appendix, where they will occur within the study area (as defined in Volume 5: Appendix SV-001-000).
- 1.2.3 In undertaking the assessment of sound and vibration, consistent with Environmental Impact Assessment (EIA) Regulations and emerging National Planning Practice Guidance¹ a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 1.2.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The assessment locations employed in this assessment are presented in Maps SV-03-016 and SV-03-017 (Volume 5, Sound, Noise and Vibration Map Book).

¹ Information is provided in the Department for Communities and Local Government's emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>, (refer to the noise exposure hierarchy), as available on 14th October 2013.

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Volume 5: Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group - Acoustics, information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- The Local Plan for Chiltern District September 1997 (Including alterations adopted 29 May 2001 and consolidated September 2007 and November 2011).

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5: Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration;
- September / October 2012: a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012: specific request for the Community Forum regarding baseline sound monitoring locations;
- January / February 2013: feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written responses to questions and sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1). Further clarification regarding specific areas is presented in the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

- 2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Volume 5: Appendix SV-001-000. Local assumptions that apply to the assessment of construction sound noise and vibration within this area are set out in Volume 2: CFA Report 09.
- 2.4.2 Tunnel boring machines (TBM) will be used to excavate the tunnels. Materials (including tunnel lining segments), people and equipment will be transported from the surface to each TBM using small construction trains, which will travel at relatively low speeds. Excavated material from each TBM will be transported to the surface by conveyor. It has been assumed that significant noise and vibration effects arising from use of the temporary railway will be avoided through appropriate design and maintenance specification. Other methods material movement may be employed; however, these would result in lower ground-borne noise and vibration.

2.5 Limitations

- 2.5.1 The route-wide limitations and the approach adopted to assure that they will not impact the robust assessment of sound, noise and vibration are presented in Volume 5: Appendix SV-001-000. No specific additional limitations are identified for this study area.
- 2.5.2 Tunnel Boring Machines (TBMs) will be used to excavate the tunnels. Materials (including tunnel lining segments), people and equipment will be transported from the surface to each TBM using small construction trains, which will travel at relatively low speeds. Excavated material from each TBM will be transported to the surface by conveyor. It has been assumed that significant noise and vibration effects arising from use of the temporary railway will be avoided through appropriate design and maintenance specification. Other methods material movement may be employed; however, these would result in lower ground-borne noise and vibration.

3 Environmental baseline

3.1 Existing baseline

- 3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are given in Volume 5: Appendix SV-002-009. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-009.

3.2 Future baseline

- 3.2.1 The assessment of noise from construction activities assumes a baseline year of 2017 which represents the period immediately prior to the start of the construction period. As a reasonable worst case, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2012/13) and the future baseline year of 2017. The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and Transport assessment (Volume 5: Appendix TR-001-000).

4 Effects arising during construction

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is as follows:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
 - Ground-borne sound and vibration
 - residential
 - non-residential
 - Airborne sound
 - residential
 - non-residential
- Assessment of impacts and effects
 - residential receptors: direct effects – dwellings
 - residential receptors: direct effects – communities
 - residential receptors: indirect effects
 - non-residential receptors: direct effects
 - non-residential receptors: indirect effects
 - cumulative effects from the Proposed Scheme and other committed development

4.2 Avoidance and mitigation measures

4.2.1 These measures are set out in Volume 2: CFA Report 09.

4.3 Quantitative identification of impacts and effects

Ground-borne sound and vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on Maps SV-03-016 and SV-03-017 (Volume 5, Sound, Noise and Vibration Map Book).

- 4.3.2 TBMs will be used to excavate the tunnels. Each TBM is likely to generate ground-borne noise and vibration impacts but only at receptors within a close distance of the centre line of the tunnels and only for short periods of time (a few days). Overall, the deeper the tunnel is, the lower the impact. The perceptible noise and vibration will increase as each TBM approaches and diminish as it moves away from the receptor. Vibration from TBM will present no risk of any building damage.
- 4.3.3 The effects of vibration from TBMs on building occupants will be short term (a matter of days) and hence they are not considered to be significant. Proactive and advanced community relations in advance of each TBM passing under properties will help manage expectations and allay possible concerns over the short term presence of vibration.
- 4.3.4 The construction activity resulting in highest forecast noise levels is reported in Table 1 and Table 2 for each assessment location and time period, where the highest forecast noise level from any individual construction activity is above 40dB LpAeq,T during the daytime and evening periods and 35dB LpAeq,T during the night-time. Where the highest forecast noise level from any individual construction activity is less than 40dB LpAeq,T during the daytime and evening or 35dB LpAeq,T during the night-time no activities have been reported.
- 4.3.5 For each assessment location, the assessment results for residential receptors are presented in Table 1. No non-residential receptors have been identified in this area within the screening distances detailed in the SMR from works which are a potentially significant source of vibration. Explanation of the information in Table 1 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual receptor.

- * Significant effect – the quantitative impact methodology has identified either:
- 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
 - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.
- ~ Significant effect – The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).
- A Type of effect – adverse effect
- S Type of effect – significant adverse effect
- NA Type of effect – not generally an adverse effect
- B Type of effect – for non-residential receptors further detail about the type of effect is set out in the text of Appendix SV-001-000
- R Type of receptor - residential
- V1 Type of receptor:
- (V1) vibration sensitive research and manufacturing, hospital, and university equipment;

Appendix SV-003-009

(V₂) hotels, hospital wards and education dormitories;

(V₃) offices, schools and places of worship; or

(V₄) workshops.

T Receptor design – typical

S Receptor design – special


Table 1: Assessment of construction induced ground-borne vibration at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
376239	Hyde Lane, Hyde End	0.24	0.12/0.12	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast - medium roller.	NA	1	R	T		-	-	1	-	
376310	Hyde Lane, Hyde End	0.14	0.08/0.08	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast - medium roller.	NA	2	R	T		-	-	1	-	
376359	Hyde Lane, Hyde End	1.05	0.39/0.39	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast - medium roller.	A	1	R	T		-	-	1	-	~
376368	Hyde Lane, Hyde End	0.18	0.09/0.09	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast - medium roller.	NA	1	R	T		-	-	1	-	
376478	Chesham Road, Hyde End	0.13	0.07/0.07	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast - medium roller.	NA	1	R	T		-	-	1	-	
700363	Hyde Lane, Hyde End	0.16	0.09/0.09	-	Chiltern tunnel - northern approach cutting - rail track formation / sub-ballast -	NA	1	R	T		-	-	1	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [m]	Mitigation effect	
			Day (0700-2300)	Night (2300-0700)											
					medium roller.										

Airborne sound: direct impacts and effects

- 4.3.6 Activities associated with the construction phases of the Proposed Scheme will generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:
- residential receptors, both as individual dwellings and communities; and
 - non-residential receptors, including quiet areas.
- 4.3.7 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly $L_{pAeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area.
- 4.3.8 Volume 2: CFA Report 09 makes reference to any major construction activity during the evening and at night but the assessment has also considered the minor essential activities that will have to operate on a 24/7 basis for reasons of safety and engineering practicability (e.g. water pumps).
- 4.3.9 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 2 and Table 3 respectively.
- 4.3.10 The construction activity resulting in highest forecast noise levels is reported in Table 2 and Table 3 for each assessment location and time period, where the highest forecast noise level from any individual construction activity is above $L_{pAeq,T}$ 40dB during the daytime and evening periods and $L_{pAeq,T}$ 35dB during the night-time. Where the highest forecast noise level from any individual construction activity is less than $L_{pAeq,T}$ 40dB during the daytime and evening or $L_{pAeq,T}$ 35dB during the night-time no activities have been reported.
- 4.3.11 Explanation of the information within Table 2 and Table 3 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

 Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual non-residential receptor.

- * Significant effect –the quantitative impact methodology has identified either:
- 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
 - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect.
- ~ Significant effect - The forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000).

A A

D	S
Sd	NA
Q	B
R	R
G	Type of receptor: (G1) theatres, large auditoria and concert halls; (G2) sound recording and broadcast studios; (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls; (G4) schools, colleges, hospitals, hotels and libraries; or (G5) offices and general commercial premises.
T	Receptor design – typical
S	Receptor design - special
H	Existing environment – high existing ambient noise levels: daytime level more than 75dB, evening-time level more than 65dB or night-time level more than 55dB L_{pAeq} at the façade.
NI	Mitigation effect - identified as likely to qualify for noise insulation under the draft Construction Code of Practice (draft CoCP).
D,E,N	Impact duration (months) – duration of impact during the day (D), evening (E) or night (N).

Table 2: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
351444	Aylesbury Road, Great Missenden	<40/46 [A]	<40/<40 [B]	<35/<35 [B]	Day: Haul route movements - on site.	NA	2	R	T	-	-	-	-	-	
351452	Aylesbury Road, Great Missenden	<40/48 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: South Heath cutting - cutting excavation.	NA	2	R	T	H	-	-	-	-	
351515	Aylesbury Road, Great Missenden	44/54 [A]	<40/<40 [B]	<35/<35 [C]	Day: South Heath cutting - cutting excavation.	NA	2	R	T	-	-	-	-	-	
353672	Church Street, Great Missenden	<40/<40 [B]	<40/<40 [>C]	<35/<35 [>C]		NA	1	R	T	H	-	-	-	-	
354579	Elmtree Green, Great Missenden	<40/40 [A]	<40/<40 [B]	<35/<35 [B]		NA	18	R	T	-	-	-	-	-	
354872	Frith Hill, Great Missenden	<40/46 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	2	R	T	-	-	-	-	-	
355246	Aylesbury Road, Great Missenden	<40/42 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: Havenfield Wood Lodge accommodation overbridge - construction works - substructure.	NA	3	R	T	H	-	-	-	-	

Assessment location		Impact criteria				Significance criteria										
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect		Significant effect
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700												
355252	Aylesbury Road, Great Missenden	<40/46 [A]	<40/<40 [A]	<35/<35 [B]	Day: Havenfield Wood lodge accommodation overbridge - construction works - substructure.	NA	1	R	T	-	-	-	-	-		
355317	Potter Row, Great Missenden	48/56 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath cutting - cutting excavation.	NA	1	R	T	-	-	-	-	-		
355352	Potter Row, Great Missenden	47/55 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath cutting - cutting excavation.	NA	2	R	T	-	-	-	-	-		
373949	Hyde Lane, Hyde End	46/54 [A]	<40/41 [A]	<35/41 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation; Evening: Chiltern tunnel - track slab (southbound tunnel); and Night: Chiltern tunnel - track slab (southbound tunnel).	NA	1	R	T	-	-	-	-	-		
374004	Hyde End, Great Missenden	44/50 [A]	<40/<40 [A]	<35/<35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	3	R	T	-	-	-	-	-		
374188	Ballinger Road, South Heath	46/54 [A]	<40/<40 [B]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	13	R	T	-	-	-	-	-		
374262	Meadow Lane, South Heath	48/54 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works -	NA	6	R	T	-	-	-	-	-		

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					construct base.										
374450	Frith Hill, Great Missenden	46/50 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
374515	Frith Hill, Great Missenden	49/57 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	3	R	T	-	-	-	-	-	
374531	Chesham Road, Great Missenden	52/58 [A]	<40/<40 [B]	<35/<35 [C]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
374552	Cudsdens Court, Great Missenden	55/61 [A]	<40/<40 [C]	<35/37 [C]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base; and Night: South Heath Green Tunnel: Phase 2 section A - cutting excavation.	NA	6	R	T	-	-	-	-	-	
374611	Frith Hill, Great Missenden	46/52 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	3	R	T	-	-	-	-	-	
374641	Frith Hill, South Heath	46/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	4	R	T	-	-	-	-	-	
374696	Frith Hill, South	52/62	<40/<40	<35/36	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works -	NA	3	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Heath	[A]	[B]	[B]	construct base; and Night: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation.										
374715	Frith Hill, South Heath	59/69 [A]	<40/43 [>C]	36/43 [>C]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base; Evening: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation; and Night: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation.	A	1	R	T	H	-	-	D 8	-	-
374775	Sibleys Rise, South Heath	59/68 [A]	<40/42 [A]	<35/42 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base; Evening: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation; and Night: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation.	A	19	R	T	-	-	-	D 8	-	CSV09-Co1
374806	Kings Lane, South Heath	54/59 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	8	R	T	-	-	-	-	-	
374849	Bayleys Hatch, South Heath	59/65 [A]	<40/40 [A]	<35/40 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base; and Night: South Heath Green Tunnel: Phase 1b	A	6	R	T	-	-	-	D 8	-	CSV09-Co1*

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					sections C, D and E - cutting - excavation.										
374914	Sibleys Rise, South Heath	60/66 [A]	<40/41 [A]	35/41 [A]	Day: South Heath Green Tunnel: Phase 1b Sections C, D and E - construction works - construct lid; Evening: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation; and Night: South Heath Green Tunnel: Phase 1b sections C, D and E - cutting - excavation.	A	25	R	T	-	-	-	D 7	-	CSV09-Co1
375025	Kings Lane, South Heath	46/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	8	R	T	-	-	-	-	-	
375067	Lappetts Lane, South Heath	50/55 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	5	R	T	-	-	-	-	-	
375134	Kings Lane, South Heath	54/59 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	10	R	T	-	-	-	-	-	
375214	Bayleys Hatch, South Heath	49/58 [A]	<40/<40 [A]	<35/35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	10	R	T	-	-	-	-	-	
375322	Potter Row, Great Missenden	53/62 [A]	<40/<40 [A]	<35/36 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base; and Night: South Heath Green Tunnel: Phase 1b	NA	5	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
					sections C, D and E - cutting - excavation.										
375417	Potter Row, Great Missenden	49/58 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	6	R	T	-	-	-	-	-	
375440	Potter Row, Great Missenden	50/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
375451	Potter Row, Great Missenden	49/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
375485	Potter Row, Great Missenden	48/60 [A]	<40/<40 [A]	<35/<35 [C]	Day: Park Farm footpath and private access footbridge - site clearance.	NA	3	R	T	-	-	-	-	-	
375495	Potter Row, Great Missenden	49/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath cutting - cutting excavation.	NA	1	R	T	-	-	-	-	-	
375508	Potter Row, Great Missenden	48/55 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	3	R	T	-	-	-	-	-	
375545	Potter Row, Great	49/56 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works -	NA	1	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria										Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Missenden				construct base.										
375619	Potter Row, Great Missenden	50/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	2	R	T	-	-	-	-	-	
375630	Potter Row, Great Missenden	48/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath cutting - cutting excavation.	NA	1	R	T	-	-	-	-	-	
375648	Potter Row, Great Missenden	45/54 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath cutting - cutting excavation.	NA	4	R	T	-	-	-	-	-	
375669	Potter Row, Great Missenden	42/53 [A]	<40/<40 [A]	<35/<35 [C]	Day: South Heath cutting - cutting excavation.	NA	5	R	T	-	-	-	-	-	
376239	Hyde Lane, Hyde End	57/65 [A]	<40/41 [C]	<35/41 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation; Evening: Hyde Lane overbridge - construction works - substructure; and Night: Hyde Lane overbridge - construction works - substructure.	NA	1	R	T	-	-	-	-	-	
376310	Hyde Lane, Hyde End	47/53 [A]	<40/<40 [C]	<35/35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	2	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
376359 ²	Hyde Lane, Hyde End	-	-	-	-	-	-	-	-	-	-	-	-	-	
376368	Hyde Lane, Hyde End	58/69 [A]	<40/42 [A]	<35/42 [A]	Day: Hyde Lane overbridge - site clearance; Evening: Hyde Lane overbridge - construction works - substructure; and Night: Hyde Lane overbridge - construction works - substructure.	A	1	R	T	-	-	-	D 3	-	~
376399	Chesham Road, Hyde End	53/58 [A]	<40/<40 [A]	<35/36 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation; and Night: Hyde Farm access track and footbridge - construction works - substructure.	NA	1	R	T	-	-	-	-	-	
376478	Chesham Road, Hyde End	59/66 [A]	<40/40 [B]	<35/40 [C]	Day: South Heath Green Tunnel: Phase 4 section A - construction works - construct base; and Night: South Heath Green Tunnel: Phase 4 section A - cutting - excavation.	A	1	R	T	-	-	-	D 5	-	~
376498	Chesham Road, Hyde End	50/58 [A]	<40/<40 [C]	<35/36 [C]	Day: South Heath Green Tunnel: Phase 1a section B - temporary divert Kings Lane to existing Chesham Road; and Night: Hyde Lane overbridge - construction	NA	1	R	T	H	-	-	-	-	

² Noise model output at the assessment location considered not to be representative, levels predicted at Assessment Location 376378 considered to better represent dwellings at this location.

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
					works - substructure.										
376517	Chesham Road, Hyde End	51/56 [A]	<40/<40 [B]	<35/<35 [C]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
376522	Chesham Road, Hyde End	51/55 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	7	R	T	H	-	-	-	-	
376647	Chesham Road, Hyde End	52/56 [A]	<40/<40 [C]	<35/<35 [C]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	2	R	T	-	-	-	-	-	
376658	Chesham Road, Hyde End	50/54 [B]	<40/<40 [>C]	<35/<35 [>C]	Day: South Heath Green Tunnel: Phase 4 section A - construction works - construct base.	NA	2	R	T	H	-	-	-	-	
376681	Kings Lane, South Heath	60/66 [A]	<40/<40 [B]	<35/38 [C]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base; and Night: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	A	1	R	T	-	-	-	D 6	-	~
376704	Kings Lane, South Heath	55/61 [A]	<40/<40 [A]	<35/35 [B]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	10	R	T	-	-	-	-	-	
376750	Kings Lane, South Heath	48/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	9	R	T	-	-	-	-	-	
377005	Wood Lane,	51/55	<40/<40	<35/<35	Day: South Heath Green Tunnel: Phase 2	NA	9	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700											
	South Heath	[A]	[A]	[A]	section A - construction works - construct base.										
377084	Lappetts Lane, South Heath	49/54 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	20	R	T	-	-	-	-	-	
377405	Wood Lane, South Heath	54/59 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	16	R	T	-	-	-	-	-	
377718	Ballinger Road, South Heath	46/53 [A]	<40/<40 [B]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	14	R	T	-	-	-	-	-	
377770	Ballinger Road, South Heath	46/53 [A]	<40/<40 [B]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	15	R	T	-	-	-	-	-	
377793	Marriotts Avenue, South Heath	46/51 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	NA	17	R	T	-	-	-	-	-	
377835	Marriotts Avenue, South Heath	47/52 [A]	<40/<40 [A]	<35/<35 [A]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	18	R	T	-	-	-	-	-	
378065	Ballinger Road, South Heath	46/52 [A]	<40/<40 [B]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	NA	22	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
379212	Bullbaiters Lane, Hyde Heath	40/49 [A]	<40/<40 [A]	<35/<35 [A]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	8	R	T	-	-	-	-	-	
379334	Hyde Heath, Amersham	41/48 [A]	<40/<40 [A]	<35/<35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	4	R	T	-	-	-	-	-	
379370	Top Common, Hyde End	47/52 [A]	<40/<40 [A]	<35/<35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	3	R	T	-	-	-	-	-	
379436	Chesham Road, Hyde End	41/48 [A]	<40/<40 [A]	<35/<35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	9	R	T	-	-	-	-	-	
379500	Browns Road, Hyde End	48/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
379633	Browns Road, Hyde End	48/53 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	NA	5	R	T	-	-	-	-	-	
379730	Brays Lane, Hyde Heath	<40/44 [A]	<40/<40 [B]	<35/<35 [C]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	82	R	T	-	-	-	-	-	
380955	Chalk Lane, Hyde Heath	45/54 [A]	<40/41 [A]	<35/41 [B]	Day: Chiltern tunnel - north tunnel portal - site clearance; Evening: Chiltern tunnel - track slab (southbound tunnel); and Night: Chiltern tunnel - track slab (southbound tunnel).	NA	4	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
382171	Chalk Lane, Hyde Heath	<40/40 [A]	<40/<40 [A]	<35/<35 [B]		NA	2	R	T	-	-	-	-	-	
382210	Chalk Lane, Hyde Heath	<40/45 [A]	<40/<40 [A]	<35/<35 [B]	Day: South Heath Green Tunnel: Phase 4 section A - construction works - construct base.	NA	1	R	T	-	-	-	-	-	
382291	Brays Close, Hyde Heath	<40/44 [A]	<40/<40 [A]	<35/<35 [A]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	45	R	T	-	-	-	-	-	
382388	Chalk Lane, Hyde Heath	<40/44 [A]	<40/<40 [A]	<35/<35 [B]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	10	R	T	-	-	-	-	-	
382636	Chalk Lane, Hyde Heath	<40/43 [A]	<40/<40 [A]	<35/<35 [A]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	17	R	T	-	-	-	-	-	
700360	Potter Row, Great Missenden	50/57 [A]	<40/<40 [A]	<35/<35 [A]	Day: Park Farm footpath and private access footbridge - construction works - substructure.	NA	1	R	T	-	-	-	-	-	
700363	Hyde Lane, Hyde End	47/54 [A]	<40/<40 [A]	<35/<35 [A]	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	NA	1	R	T	-	-	-	-	-	
700461	Little Missenden, Amersham	<40/48 [A]	<40/<40 [B]	<35/<35 [C]	Day: Little Missenden tunnel ventilation and intervention shaft (vent shaft) - site establishment.	NA	2	R	T	-	-	-	-	-	
700490	Missenden Road,	42/49 [A]	<40/<40 [A]	<35/<35 [B]	Day: Little Missenden tunnel vent shaft - site establishment.	NA	2	R	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
	Amersham														
720302	King's Lane, South Heath	70/80 [A]	<40/50 [A]	40/50 [B]	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base; Evening: South Heath Green Tunnel: Phase 1a section B - construction works - construct base; and Night: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	S	1	R	T	-	-	-	D 18	NI	CSV09-D01

Table 3: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
351515	Aylesbury Road, Great Missenden	44/54	-	-	Day: South Heath cutting - cutting excavation.	B	1	G5	T	-	-	-	-	-	
353672	Church Street, Great Missenden	<40/<40	<40/<40	<35/<35		B	1	G4	T	H	-	-	-	-	
355246	Aylesbury Road, Great Missenden	<40/42	-	-	Day: Havenfield Wood Lodge accommodation overbridge - construction works - substructure.	B	1	G5	T	H	-	-	-	-	
374262	Meadow Lane, South Heath	48/54	-	-	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	B	1	G5	T	-	-	-	-	-	
374330	Church Lane, Great Missenden	<40/41	<40/<40	-	Day: South Heath Green Tunnel: Phase 1a section B - construction works - construct base.	B	1	G3	T	H	-	-	-	-	
376647	Chesham Road, Hyde End	52/56	-	-	Day: South Heath Green Tunnel: Phase 2 section A - construction works - construct base.	B	1	G5	T	-	-	-	-	-	
377770	Ballinger Road, South Heath	46/53	-	-	Day: South Heath Green Tunnel: Phase 1b sections C, D and E - construction works - construct base.	B	1	G5	T	-	-	-	-	-	

Assessment location		Impact criteria				Significance criteria									Significant effect
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the façade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
379334	Hyde Heath, Amersham	41/48	-	-	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	B	1	G5	T	-	-	-	-	-	
379730	Brays Lane, Hyde Heath	<40/44	<40/<40	-	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	B	2	G3	T	-	-	-	-	-	
379730	Brays Lane, Hyde Heath	<40/44	<40/<40	<35/<35	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	B	1	G4	T	-	-	-	-	-	
379730	Brays Lane, Hyde Heath	<40/44	-	-	Day: Chiltern tunnel - northern approach cutting - cutting excavation.	B	2	G5	T	-	-	-	-	-	

Airborne sound: indirect effects

- 4.3.12 Construction road traffic associated with the construction phases of the Proposed Scheme will generate airborne noise. The change in traffic noise level at a reference distance of 10m from the edge of the nearside carriageway resulting from the presence of construction traffic for a given road has been predicted, based upon traffic information for the Proposed Scheme. The results for the roads where potentially significant effects could arise are presented in Table 4.
- 4.3.13 Explanation of the information within Table 4 is provided in Volume 5:Appendix SV-001-000, with the following additional notes:



Where the significant effect column is highlighted, then a significant effect is identified on nearby communities or individual receptors

Change values



Yellow denotes a minor impact – a change of between 3 and 5dB or between 1 and 3dB where a high existing sound level is identified



Orange denotes a moderate impact – a change of between 5 and 10dB or between 3 and 5dB where a high existing sound level is identified



Red denotes a major impact – a change of more than 10dB or more than 5dB where a high existing sound level is identified

Table 4: Assessment of construction traffic noise levels

Road name	Link	Future baseline sound level (dB)	Future baseline sound level + construction traffic (dB)	Change (dB)	Significant effect
		Daytime L _{pAeq,16hr} 0700-23:00 free-field	Daytime L _{pAeq,16hr} 0700-2300 free-field		
King's Lane (south of Frith Hill)	South Heath	57.5	63.3	+5.8	CSV09 Co2

4.4 Assessment of significant effects

Residential receptors: direct effects – individual dwellings

- 4.4.1 Taking account of the avoidance and mitigation measures set out in the previous paragraphs, two residential buildings (a dwelling on Kings Lane and a dwelling on the B485 Chesham Road) are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP (CSV09-Do1). For daytime construction the trigger level is an equivalent continuous noise level of 75dB³.
- 4.4.2 The mitigation measures, including noise insulation, will reduce noise inside all dwellings, including the dwelling on Kings Lane and the B485 Chesham Road such that it does not reach a level where it would significantly affect¹ residents.

Residential receptors: direct effects -communities

- 4.4.3 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects¹ on the majority of receptors and communities. Residual temporary noise or vibration effects are identified later in this document.
- 4.4.4 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.
- 4.4.5 In locations with lower existing sound levels, construction noise effects¹ are likely to be caused by changes to noise levels outside dwellings. These may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life. These effects are considered to be significant when assessed on a community basis taking account of the local context⁴.
- 4.4.6 In this area, the direct construction noise effects on the acoustic character of the areas around the residential communities identified in Table 5 are considered to be significant.
- 4.4.7 Detailed information regarding landscape earthworks was not available at the time of the quantitative assessment. Therefore a screening assessment of the noise arising from these works on non-residential receptors has been undertaken by determining the minimum distance from the works site boundary at which the onset of a construction noise impact would be expected. In accordance with the draft CoCP these effects will be subject to review as part of the Section 61⁵ application process for the construction works. The screening assessment used represents a worst case scenario. The assessment has resulted in identification of no likely significant effects on residential receptors.

³ L_{pAeq,0800-1800} measured outdoors at the building façade.

⁴ Further information is provided in Volume 5: Appendix SV-001-000.

⁵ Section 61 Agreement under the Control of Pollution Act, 1974 (c.40). London, Her Majesty's Stationery Office.

Table 5: Likely direct significant construction noise and vibration effects on communities and associated facilities

Significant effect number	Type of significant effect	Time of day	Location	Cause (construction activities)	Assumed duration of impact and details
CSV09-Co1	Construction Noise	Daytime	Approximately 50 dwellings on Sibleys Rise, Bayleys Hatch and Frith Hill, South Heath	South Heath Green Tunnel Construction with typical and highest monthly noise levels of 59dB and 65 to 68dB	Eight months

- 4.4.9 At Assessment Location 374849 the quantitative assessment has not indicated that a significant effect is likely at Bayleys Hatch. However, on a precautionary basis dwellings on the western end of this street have been included within the CSV09-Co1 community effect.

Residential receptors: indirect effects

- 4.4.10 Construction traffic is likely to cause adverse noise effects on residential receptors along King's Lane (south of Frith Hill) where it passes through South Heath (CSV09-Co2) - approximately 50 dwellings located immediately adjacent to the road which is forecast to experience an increase in outdoor noise levels of around 6dB during the peak months (further information is provided in Section 12: Traffic and Transport).
- 4.4.11 These adverse effects¹ would be a change in the acoustic character of the area such that there is a perceived change in the quality of life. The effects are considered to be significant when assessed on a community basis taking account of the local context.
- 4.4.12 A significant indirect noise effect (CSV09-Co2) has been identified at residential receptors along King's Lane in South Heath due to an increase in construction traffic. In addition, a direct significant noise effect as a result of construction works associated with the South Heath Green Tunnel has been identified at Sibleys Rise, also in South Heath (CSV09-Co1). Sibleys Rise is located between the Proposed Scheme and King's Lane. If these two effects occurred at the same time it is considered unlikely that the magnitude of the effect would be significantly increased at Sibleys Rise. This is due to the distance between King's Lane and the receptors on Sibleys Rise, in addition to the screening effect of properties situated adjacent to King's Lane.

Non-residential receptors: direct effects

- 4.4.13 Significant construction noise or vibration effects on non-residential receptors are unlikely to occur in this area.

Non-residential receptors: indirect effects

- 4.4.14 Significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area.

Cumulative effects from the Proposed Scheme and other committed development

- 4.4.15 This assessment has considered the potential cumulative construction noise effects of the Proposed Scheme and other committed developments⁶. In this area, there is no development that would be likely to result in any significant cumulative construction noise and vibration effects.

⁶ Refer to section 2 of Volume 2: CFA Report 09.

5 References

Control of Pollution Act 1974 (c.40). London, Her Majesty's Stationery Office.